What is claimed is:

1. A biocompatible polymer composite for use in thermally-related medical therapies, the composite comprising a base polymer component and a dispersed filler component, the filler component having a thermal conductivity of less than 5 W/m-K.

2. A biocompatible polymer composite as in claim 1 wherein the filler component has a thermal conductivity of less than 2 W/m-K.

3. A biocompatible polymer composite as in claim 1 wherein the filler component has a thermal conductivity of less than 0.5 W/m-K.

4. A biocompatible polymer composition as in claim 1 wherein the filler component is at least partly a glass.

5. A biocompatible polymer composition as in claim 1 wherein the filler component is at least partly a ceramic.

6. A biocompatible polymer composite as in claim 1 wherein the filler component has a metallic coating.

7. A biocompatible polymer composite as in claim 1 further comprising an electrically conductive filler component dispersed in the base polymer.

8. A biocompatible polymer composite as in claim 1 further comprising a ferromagnetic filler component dispersed in the base polymer.

9. A biocompatible polymer composite as in claim 1 further comprising a chromophore filler component dispersed in the base polymer.

10. A biocompatible polymer composite as in claim 1 further comprising a light reflecting filler component dispersed in the base polymer.

11. A biocompatible polymer composite as in claim 7 wherein the composite has a resistivity ranging from 0.1 ohm/cm. to 50 ohms/cm.

12. A biocompatible polymer composite as in claim 7 wherein the composite has a resistivity ranging from 0.1 ohm/cm. to 10 ohms/cm.

13. A biocompatible polymer composite as in claim 1 wherein the composite is formed into a gel.

14. A biocompatible polymer composite as in claim 1 wherein the composite is formed into a filament.

15. A biocompatible polymer composite as in claim 1 wherein the composite is formed into microshells having hollow cores.

16. A biocompatible polymer composite as in claim 15 wherein the microshell cores are filled with a gas.

17. A biocompatible polymer composite as in claim 15 wherein the microshell cores are filled with CO_2.

18. A biocompatible polymer composite as in claim 15 wherein the microshell cores are filled with first and second cooperating polymerizable components.

19. A biocompatible polymer composite as in claim 15 wherein the microshell cores are filled with a drug.

20. A biocompatible polymer composite as in claim 1 wherein the base polymer component is at least one of a polyethylene, a copolymer of at least one olefin, a polyamide, a polycarbonate, a polystyrene, a polyacrylonitrile, a polyacetal, a thermoplastic modified cellulose, a polysulfone, a thermoplastic polyester, a PET, a poly(ethylacrylate) or poly(methyl methacrylate), a nylon, a fluoropolymer such as polyvinylidene fluoride, or an ethylene tetrafluoroethylene.

21. A method of making a biocompatible polymer composite for use in thermally-related medical therapies, the method comprising the steps of:

(a) providing a biocompatible base polymer;

(b) providing a biocompatible dispersable filler material that has a thermal conductivity of less than about 5 W/m-K; and

(c) mixing the filler component in the base polymeric when in a melt state.

22. A method of making a biocompatible polymer composite as in claim 21 further comprising the step of mixing an electrically conductive filler into the base polymer.

23. A method of making a biocompatible polymer composite as in claim 21 further comprising the step of mixing an anti-oxidation agent into the base polymer.

24. A method of making a biocompatible polymer composite as in claim 21 wherein the mixing step includes mixing the filler component in the base polymer in an inert gas atmosphere for extending the mixing time and limiting oxidation reactions of the filler component and base polymer.

25. A method of making a biocompatible polymer composite as in claim 21 wherein the mixing step includes mixing the filler component in the base polymer in a gas atmosphere that is free of oxygen.

26. A method of making a biocompatible polymer composite as in claim 21 wherein the mixing step includes mixing the filler component in the base polymer in an inert gas atmosphere that is heavier than air.

27. A method of making a biocompatible polymer composite as in claim 21 further comprising the step of applying cross-linking means to the base polymer comprising at least one of chemical cross-linking and cross-linking by irradiation.

28. A method of making a biocompatible polymer composite as in claim 21 wherein the cross-linking irradiation is at least one of gamma, UV and E-beam irradiation.

29. A therapeutic method for treating tissue, the method comprising the steps of:

providing a biocompatible polymer composite comprising a base polymer component and a dispersed filler component, the filler component having a thermal conductivity of less than 5 W/m-K;

introducing the polymer composite to a site about a body structure;

performing a thermally-mediated treatment on a first region of the body structure wherein the polymer composite thermally protects an adjacent second region of the body structure.

30. A method of applying energy to tissue, the method comprising the steps of:

providing a biocompatible polymer composite comprising a base polymer component and a first dispersed filler component having a thermal conductivity of less than 5 W/m-K and a second filler component comprising energy-coupling means;

introducing the polymer composite to a targeted site about a body structure;

applying energy to the polymer composite wherein the energy-coupling means localizes energy application the targeted site.

31. A method of applying energy as in claim 31, wherein the providing step provides energy-coupling means that comprise at least one of electrically conductive filler materials, ferromagnetic filler materials and chromophore filler materials.

32. A method of applying energy as in claim 31, wherein the applying step comprises applying energy selected from the class consisting of electrical energy for ohmic heating, magnetic energy for inductive heating and light energy for chromophore absorption.

33. A method of for controlled application of energy to tissue, the method comprising the steps of:

providing a biocompatible composite comprising a flowable media that carries a dispersed first component comprising energy-coupling means and a dispersed second component comprising a hollow microspheres;

introducing the composite to a treatment region in a body;

applying ultrasound imaging means to the targeted region thereby acquiring data relating to the distribution energy-coupling means about the treatment region;

utilizing algorithms in a controller system to locally and selectively modulate energy application to the energy-coupling means based on its distribution about the treatment region.